

NEWSLETTER OF THE
NORTHERN CALIFORNIA CONTEST CLUB
44 TOYON TERRACE
DANVILLE, CA 94526
April 1987

NO. 178

PRESIDENT: WR6R, AL	AWARDS: K6ZM, PHIL
VP/CC: W7MAP, CHUCK	EDITOR: WR6R, AL
SEC/TREAS: NV6Z, RON	DIRECTORS: WA6VEF, GARY,
MEMBERSHIP: W6REC, DUANE	W6REC, DUANE, KA6ING, LOUESE PHIL, K6ZM

NCCC REPEATER, W6RGG, 147.24 Mhz - NET EVERY WED 8 : 00 PM

AWARDS BANQUET APRIL 18

COMING EVENTS

APRIL 4 NORTH AMERICA QSO PARTY-CW
APRIL 11 NORTH AMERICA QSO PARTY-PHONE
APRIL 18 NCCC AWARDS AND ELECTIONS MEETING
MAY 30-31 CQWPX CW CONTEST

FROM THE PREZ DE WR6R

WPX has just finished with a lot of club members making noise. Thanks to all the mult-single stations that opened the door to all those that needed a place to operate and contribute to the club. The CW weekend will not fall on Memorial Day (May 25), so make your plans to finish off the contest season in a big way! Please send a copy of your summary sheet to K6ZM.

This my last article as Prez- Best of Luck to the new President and I hope the members help and pitch in to keep the NCCC the best Contest Club in the World!

NCCC AWARD BANQUET

April 18, 1987

Pleasanton Hotel, 855 Main Street, Pleasanton

5:30-6:30 Cocktails

6:30 - Dinner

Entrees : London Broil, Cabernet Sauvignon Sauce ; Breast of Chicken with Mushrooms and Champagne Sauce - \$ 17.00

The Pleasanton Hotel, built in 1851, is the site of the 1987 Awards and Election of Officers Banquet. Although the \$17.00 cost may seem high, the food and setting is first class.

Please R.S.V.P. with KA6ING by April 12, 1987.

Elections will be held at the meeting and the following candidates have thrown in their hats in the ring for office:

President: WZ6Z, Howard

Sec/Tres. : VE2AQS, Bob

Board of Directors: 1. K6ZM, Phil, 2. NV6Z, Ron, 3. KA6ING, Louese 4. W6REC, Duane.

The office of Vice-President is still open!

As with all the meetings in Hayward, or elsewhere, if you must smoke, please do it outside the meeting area as the NCCC has a no smoking rule for all meetings.

Plaques for the 1986 CQWW will be given to the following at the banquet:

Single op. Phone Domestic: W6G0

Single op. Phone DX: WR6R/KH6

Single op. CW Domestic: N6RO (WA6VEF) Mult-Mult PhoneDX: PJ4B (K3EST)

Mult-S CW Domestic: AI6V

Mult-S Phone DX: AI6V/KH6

Mult-S Phone Domestic: NB6L

Mult-Mult Domestic PH: N6RO

Mult-S CW DX: VP5X (K6ANP)

Framed Certificates for the 1986 CQWW will be given to the following single operators:

WX6M, Rich, 743 QSO'S
N6EK, Bob, 715 QSO'S
N6GG, Rich, 714 QSO'S
W6BSY, Mac, 619 QSO'S
WE6G, Mike, 593 QSO'S
K16CG, George, 531 QSO'S
K6KLY, Russ, 525 QSO'S

Framed certificates will be given to the ops.

NB6L (M/S PHONE):

AK6T, PAT ; K4UVT, Bob, ; K6ZM, Phil ; K16EZ, Alex.
W6SZN, Kip- AI6V (M/S) CW
K6GSS, John- AI6V/KH6 (M/S) Phone
KK6X, Jim ; WW6F, Lyle- VP5X (M/S) CW

Certificates will be given out to the N6RD winning M/M Domestic:

N6BV, Dean
N6KT, Rich
NU6S, Tim
NV6Z, Ron
W6XX, Pete
WA6YEF, Gary
K6TMB, Lou

FOUNDER'S TROPHY

Awarded to the NCCC member achieving the highest score in both Phone and CW contests on all bands, operating inside the NCCC territory. A call letter and score plate is added each year and the trophy is held by the winner for that year.

The 1986 winner (also the winner in 1985) is W6FSJ, Wendell.

The 1982 winner was N6BV, Dean with 3, 597, 524

The 1983 winner was N6QR, Adam with, 2, 623, 051

The 1984 Winner was WC6I, Steve with 482,685

These past winner's will have their scores engraved to the trophy along with the 1986 winner.

SOME ANTENNA QUESTIONS

-or-

WHY DON'T MY ANTENNAS WORK? de N6BT

1. A low VSWR across the band means the antenna is working well. (Yes/No)
No - all it means is that the VSWR is low across the band. If the VSWR is extremely flat, it probably means the system has large losses in the antenna (traps, etc.) or in the feed line. The best example is a dummy load - it is flat across the entire band, but does not radiate very well! Using more than one driven element (properly done) will tend to make a flatter VSWR across the band (i.e. a log periodic).
2. A high VSWR means that the antenna is not working well at all. (Yes/No)
No - all it means is that the antenna is not properly matched to the feed line. If the antenna is operated in this condition, provided that the exciter/amplifier can drive the line, there will be losses in the feedline. These losses might not even be too great, depending on the feed line type (open-wire is the best).
3. A delta loop can be very low to the ground ("squished" fairly flat) and still work very well. (Yes/No)
No - as the delta loop becomes more squished together, it acts more and more like a transmission line. The ultimate would be a parallel transmission line, which would be basically a dead short to the desired RF energy. The most efficient is when all three sides are equal length and the angles are all 60 degrees; however, this is not the easiest to match.
4. A single driven element in a Yagi-type antenna is as good as a dual-driven system. (Yes/No)
Yes - depending upon the meaning of the term "good". The purpose of the driver is to excite the antenna. The single driver does this just fine. The only difference is that the dual-driven (multiple-driven) can maintain a flatter VSWR across the band. This is usually not a problem, however, because the VSWR with a single driver can be tuned for a VSWR of under 2:1 across most bands.
5. The radiation pattern from a Yagi-type antenna is the same for a single driver as for a dual (multiple) driver system? (Yes/No)
No - the single driver will have deeper side nulls, whereas a dual-driven will have "ears" off the sides (towards the back of the pattern).
6. The length of the driven element in a Yagi-type antenna is critical for antenna performance (gain and front/back ratio). (Yes/No)
No - the only real purpose of the driver is to put power into the array. The length (within reason) is only important to the type of matching system used.
7. Driven or parasitic arrays that are close-spaced are easy to match and tune. (Yes/No)
No - definitely not! The mutual interactions between the elements are tremendous. Moving the spacing from 1/8 wave to 1/4 wave makes the antenna easier tune and match, because the "mutuals" are much less significant.

8. A vertical antenna works best on a hill. (Yes/No)

No - it works worst on a hill. It works best on a beach, over-looking the ocean. It also works better on flat terrain, even if there is not water around. If one is situated on a hill, use non-vertical type antennas.

9. The gain of a Yagi-type antenna primarily depends on the number of elements. (Yes/No)

No - it depends on boom length. The number of elements is almost not related to gain at all, provided that the spacing between the elements does not exceed (about) $1/4$ wavelength. Using a boom of $3/4$ wave length (52.5 feet on 20 meters), a six-element Yagi and a four-element Yagi on the same boom will have gain that is within 0.1db of each other. Additional directors can either help or hinder the F/B ratio.

10. When calculating antenna heights above ground, boom lengths and element spacings, the formula for the length of a half wave is $468/f$ (in MHZ). (Yes/No)

No - this is for a half-wave antenna using material with a fairly typical velocity factor. The correct formula is $492/f$ (in MHZ) for a half wave (in free space).

11. Having an 80 meter dipole 10 feet from other antennas will ensure minimum interaction. (Yes/No)

No - since a wavelength on 80 meters is about 270 feet and since antennas can couple effectively out to a $1/4$ wavelength (67 feet), 10 feet is not much. The best rule of thumb is to make a VSWR plot before any other antennas are raised and then compare it after the additional antenna is up. If the VSWR plot has changed very much, there is a coupling problem. If possible, each antenna should be plotted in place by itself, then after each one lower in frequency is erected.

12. In free space and using the latest antenna analysis programs, how much forward gain does the well designed Hy-Gain 204BA (4 el, 26' boom) antenna have? (in db)

It has 8.35 - 8.52 dbi. Referenced to a dipole, it has 6.19 - 6.36 db

13. How much more forward gain does a well-designed 6 element Yagi of twice the boom length have over a 3 or 4 element Yagi? (in db)

Using the optimized W2PV design, the long-boom (52') 6 element Yagi has 2.12 - 2.34 db more forward gain. The half-power beam width is 52 degrees for the 6 element and 62 degrees for the shorter antenna (reference the 204BA).

14. Why, then, does the bigger antenna seem to work so much better than 2 db? (essay answer)

In general terms, the 2db difference represents more than meets the eye at first glance. Perhaps the most important difference is lobe compression.

15. If I can't put up one of those huge antennas, can I still be competitive and have fun in pile-ups and contests? (Yes/No)

Yes - just don't expect to always be first in the pile-ups or final scores. There will be times when you will walk right through a big antenna; consequently, sharpen up your operating skills and have it happen more often! The more difficult station to beat is the one with antenna diversity and flexibility.



HAM Radio Outlet
LARGEST HAM OUTLET IN THE WORLD

OUR COMMITMENT TO YOU IS
QUALITY, ACTION & SERVICE

7 STORE BUYING POWER

KENWOOD TS-940S



TOP-OF-THE-LINE
HF TRANSCIVER
GREAT PRICE. CALL

KENWOOD

TM-3530A



THE FIRST Comprehensive
220 MHz Transceiver
**ARE YOU READY FOR
220 MHz OPERATION?**



**HAM RADIO
HOME STUDY
NOVICE VOICE COURSE**

- Updated text-book style instruction
 - 8 audio cassettes & more cassette tapes
 - 2 hour books, code practice, key & battery
 - Color flash cards, code practice, key & battery
 - Color flash cards, code practice, key & battery
 - Color flash cards, code practice, key & battery
 - FCC license application forms & instructions to your examiner. Ideal for spouses & the kids!
- \$49.95**

All Major Brands in Stock Now!

CALL TOLL FREE (800) 854-6046

60 April 1987

Tell 'em you saw it in HAM RADIO!

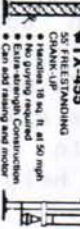
Shipping including P&H. Prices vary 7:00 am to 5:00 pm Pacific Time. California, Alaska and Hawaii. Call for rates and store locations. Children, Alaska and Hawaii residents please add state tax. Prices, specifications, description subject to change without notice.



MA-40
40' TOWER
4745 SALE! \$549

MA-550M
55' TOWER
4324 SALE! \$899

TX-455
55' FREESTANDING
CRANK-UP
No wiring required
Extra strength construction
Carve and rotate and motor
drive accessories



IN STOCK FOR QUICK DELIVERY
OTHER MODELS AT GREAT PRICES

hy-gain
CRANKUP SALE!

Single Strength
(handles 9 sq. ft.)
HG37SS - 37' Tower
HG52SS - 52' Tower

Heavy Duty
(handles 16 sq. ft.)
HG54HD - 54' Tower
HG70HD - 70' Tower

- All steel
- Includes base & rotor plate
- No wiring required
- Heavy duty construction
- Accessories available

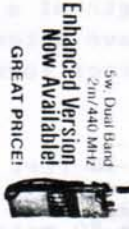
CALL FOR PRICE!



**KENWOOD
R-5000**

High Performance Receiver
Sensitivity: 10 dB (100 Hz BW) 10 dB (30 kHz BW)
Selectivity: 10 dB (100 Hz BW) 10 dB (30 kHz BW)
Dynamic Range: 10 dB (100 Hz BW) 10 dB (30 kHz BW)

**YAESU
FT-727R**



5w. Dual Band
21m/440 MHz
**Enhanced Version
Now Available!**

LOW PRICE!

**20w. 100w. incl.
with low cost
power pack**



From the Outfitter of the
QUALITY VHF AMP/RECALL COMBO
\$218.95
Full Line Now Includes
VHF Amps with
CALL FOR PRICE!



44 Toyon Terrace
Danville, CA 94526

W60AT 6/87
Charles Epps
651 Handley Trail
Redwood City, CA 94062



RESULTS

1986 CALIFORNIA QSO PARTY

There can be no doubt about it. Despite so-so conditions on twenty meters and little or no propagation on 15 and 10, the 1986 California QSO Party (CQP) was by far the biggest and best ever. Bolstered by an expanded awards program and a massive pre-contest publicity campaign, a record-breaking 298 logs were received from 51 California counties, 46 states, 6 Canadian sections, and 11 DXCC countries.

Activity was tremendous, as no less than 39 entrants established new single operator scoring records during the weekend--13 of them in California and 26 out of state. CW activity in '86 improved dramatically over CQP weekends of past years. Many W6s were able to maintain good QSO rates on code for more than an hour at a time, and a few participants said that the 20 and 40 meter CW subbands sounded at times like a running of the North American Sprint! In fact, 51 operators sent in logs containing only CW QSOs.

The phone bands were crowded too. California stations formed a 75 KC wide wall of RF on 20 meters during both days of the contest, while serious out-of-state competitors found holes in the wall to call CQ into California hoping to attract W6s who were not actively participating in the test.

Many of the operators who sent in logs for this '86 event came to the conclusion that the CQP is no ordinary state QSO party--for most it is plain and simply FUN. Indeed the Party provides out-of-state ops with an opportunity to work a plethora of W6s and pick off lots of rare California counties. And, for stations in the Golden State, the CQP is different from most contests in that one doesn't need monster antennas to make a lot of QSOs. As Dave, AA6RX, so aptly put it, "In this contest, anyone in California with an amp is a "big gun."

California Competition

Leading the pack of California single-ops this year was Mark Beckwith, WA6OTU, who operated station W6AQ to a 266K first place finish and a new Los Angeles County record. Mark started Sunday morning of the CQP 75 QSOs behind the leaders, fell to 140 Qs behind by mid morning, and then managed to catch up with some fantastic 20 meter SSB rates during the final few hours of the test. Primarily a CW enthusiast, one might

suspect that Mark now thinks that Phone contests are FBI!

Second place in the '86 CQP goes to Dean Straw, N6BV, who compiled a fine 262K score while fighting line noise the entire weekend. And, finishing third was Gary Caldwell, WA6VEF, guest operating from a portable "Field Day style" station set up by Tom Schiller, N6BT, in Kings County. This effort, featuring monobanders on 10 through 40 meters, established a new single-op county expedition record of 258K.

In spite of the unremarkable band conditions, eight of the Top Ten CA single ops (W6AQ, N6BV, N6BT, NI6W, AI6V, W6REC, N6QR, and NV6Z) set new county scoring records. As well, the average Top Ten CA score rose from 164K in 1985 to 223K in 1986, which is the highest average in CQP history. Congratulations to Ron, NV6Z, who cracked the CA Top Ten for the first time. And, out to prove that the Cal QSO Party is not just a Phone contest, N6QR finished ninth with 1,001 QSOs, ALL of them on CW! A special mention should also be made of W6JTI and W6UQF who both made the Top Twenty in-state while running barefoot radios. Other CA single-ops who scored new records were W6DPD, K6AAW, K6LRN, W6HAL, and N1EE/6.

Out-of-State Competition

Competition outside of California was the toughest ever in a CQP. The number one spot in the 1986 Party goes again to Larry "Tree" Tyree, N6TR/7, who set, for the second consecutive year, a new out-of-state scoring record with an incredible 130,500 points. Tree not only became the first person ever to break the 1,000 QSO barrier from outside of the Golden State, he also managed to contact all 58 California counties, a feat not accomplished since K7GM did it back in 1975.

Finishing in second place was Dave Pascoe, KM3T, with a very impressive 80 kilopoints. Although Dave's numbers are 50K down from those of N6TR, his effort represents the biggest CQP score ever made from the eastern seaboard. Dave worked 57 California multipliers, missing just Tuolumne County. Tuolumne, as it turned out, proved to be the most elusive county in the contest. Of the 18 out-of-state stations who worked at least 50 multipliers, 11 of them missed Tuolumne. Other tough ones--9 of 18 missed Trinity and Plumas; 8 failed to find Mariposa; 6 missed

Monterrey; 5 didn't work Sutter; and 4 were eluded by Inyo, Lake, and Siskiyou.

Landing in third with 64K and 56 CA counties was John Barber, N5JB. These top three outside CA, along with other Top Ten finishers KS3F, AA4NC, VE7SK (who did it with dipoles and a vertical), and K4LTA, all set new single-op scoring records. Other new records were established by WL7K, ACOS, WX4G, K6GSS/KH6, N18L, NB1B, WA3PWL, N8ET, KALGOW, W6OKX/4, KD0EE, WB7TJI, W3YY, K7MM, VE2EDK, VE6BMX, VE8CM, LA8PF, and YV5BPG.

It took 53K (a QSO total of about 400, depending on the multiplier and the mix of CW and SSB QSOs) just to make the Top Ten this time around. In fact, ACOS's 23K effort, a score ranked number twenty six in the 1986 CQP, would have been third in the 1985 contest! The state of Texas led the pack with eleven entries; however, the most competitive state was Colorado, where five stations (ACOS, KJOG, N0FFZ, W2FV, and KR0U) all broke the existing single-op record.

A special thank you is in order to Stewart, VE8CM, who made "many points" passing out that rare NWT/Yukon multiplier to deserving W6s. Twenty-one California stations worked all 58 multipliers, and VE8/VY1 was not the problem it usually is.

Multi-operator Competition

Multi-op activity in the 1986 CQP was somewhat scarce, surprisingly so with the addition of two new multi-op trophies for the '86 contest. Grabbing the top spot in the multi-single category was Rich Cutler, WC6H, who, along with lots of help from W7MAP and WC6I, coasted to a 209K victory from San Joaquin County. The multi-single runner-up was the River City Contest Club out of Sacramento, CA, who put Colusa County on the air using the callsign KF6A. Their score is tops among the multi-operator California county expedition entries.

Of the multi-multi participants, first place goes to the two-man team of Bob, N6ZB, and Jim, KS6H, for their 136K portable operation from Merced County.

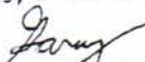
California County Expeditions

Again this year we owe a very special debt of gratitude to those intrepid individuals who, as participant W3HDH put it, "pack the transceiver in the car and journey off to give all of us a rare multiplier." A big "Thank You!!!" is in order to

this nice long list of California county expeditioners: K6AAW in Lassen, W6BSY/M in Alpine (the highest scoring mobile entry in the contest), N1EE/6 in Sierra, and WA6ZBX in Mono, all battling cold and snowy weather conditions . . . K6TMB in a cozy cabin in snowy Placer . . . N6ESV in Glenn, Yuba, Sutter, and Placer . . . W6TVP/M in Alpine and Sierra . . . WW6F and K6ANP in Yuba testing rigs and antennas in preparation for their VP5X CQWW CW effort . . . N6LL on a camping trip in Kern . . . KF6A, K6SG, KV6H, N6IG, N6GJC, and NB6G in Colusa . . . the K6YA multi-op team camping out on Mt. Tamalpais in Marin County . . . N6BIS in Madera . . . K16EZ in Sacramento . . . K6XO/mobile in 10 counties, among them some of the rarest in the contest . . . NV6Z in San Benito . . . and WA6VEF and N6BT in Kings.

The Team Behind the Scenes
 The success of the 1986 California QSO Party was no accident--it was the culmination of the efforts of a hard working team. The Northern California Contest Club would like to acknowledge these amateurs for their help with the '86 CQP: WA6AUE, WC6I, NU6S, K6SG, WE6G, K6MBV, WW6D, and W6REC who all served to co-ordinate NCCC and Northern California CQP activity; NE6I and N6ADI who co-ordinated CQP activities in the Southern California Contest Club; W6CF, KA6ING, K16EZ, and K6GSS for helping with publicity; N6EK for printing up the CQP certificates; W7MAP for helping with photocopying, collating, and awards; W6SZN for maintaining the CQP all-time records list; K5ZD of the National Contest Journal who graciously provided a set of NCJ mailing labels for the pre-contest publicity campaign; N61IU and WA5VUL of the Foothills Amateur Radio Society for their long hours of help with the CQP T-Shirts; N6AUV for his promotional ideas and financial wizardry; and especially Jim Wade, W6SHS, for his generous support of the 1986 CQP.
 Be sure to mark your calendar for

October 3rd and 4th, 1987, as the '87 California QSO Party returns to its traditional slot, the first full weekend in October. See you then!

73,

 Gary Caldwell WA6VEF
 1986 CQP Chairman

Soapbox
 Out-of-State.....
 Did much better than last year, put up beam at 70'. Where, oh where, was San Francisco of all places? (WL7K) . . . This is the best activity I've heard for the Party since I first tried it five years ago. Good job! (KROU) . . . Worked W6JTI in Humboldt for my last CALIF county! (K1BV) . . . Good contest, I'll go full boat next year! (WX4G) . . . Mni tnx for another GREAT test! I think the Cal regulars are some of the most courteous ops on the air--that is one of the reasons this is such an FB Party. CU in '87 (WA9MRU) . . . Super party! But we needed more mobiles to put the "rare" ones on the air. (NOFMR) . . . On weekends I work on an ambulance. Saturday we had four runs. Kinda cut into my score. (KD0YP) . . . Score could have been much better, but too much Red Sox pennant fever the same weekend! (W1APU) . . . Had a ball in the contest. Never expected to work so many CA stations in 20 1/2 hours! (KM3T) . . . After the 15M opening on Sat., I went out and threw together a 3 el 15M beam. Naturally, there was no opening there on Sunday. (NB1B) . . . I especially appreciated WC6H & how personable & appreciative he was of each QSO he had. (W8JRK) . . . Conditions were really sad. This is the worst score for me (in the CQP) since 1980. Still had a good time.

(WB5ROI) . . . The W6 wine award was what convinced the XYL that I should put in an effort in the contest! (N8ET) . . . Well, here is the log, proof of my insanity!! This was by far the best QSO Party I've seen. Lots of activity! (N6TR/7) . . . I went to bed about 0630Z and got up and back on the air about 1030Z to operate a couple of hours before going to church. I couldn't find a single California station on the bands, so now I know when you guys take your rest stop! (K4LTA) . . . This is one of the finest contests around and, certainly, the best state QSO Party. (WB7TJI) . . . Here don't operate when U of W or the Seahawks are on TV, which can be very hazardous to one's health. (KC7YE) . . . Worked five new counties; only one left, Mariposa. (VE1DH) . . . I make contests very often, and I prefer this one. (VE2EDK).....

And from California.....
 It was a lot of fun even if the condx were bad. (W6NAT) . . . Drove the 250+ miles (to get to Lassen Co.) mostly on snow and ice. The entire set up (station and all antennas) were put up Friday afternoon and night in the wind/rain, which later turned to snow. (K6AAW) . . . I've been a ham for about 10 months and this is my first try at contesting--had a ball! (WU6I) . . . Missed (most of the) first nine hours as generator wouldn't start. Ran them barefoot off the camper battery while taking breaks trying to start (it). Temps were zero to 20F in winds to 40 MPH with snow. (WA6ZBX) . . . I got back on again on Sunday afternoon hoping to get Plumas County on the map with a few more contacts and then realized that the contest was over!! KB6LSP . . . The 1986 CQP was a great success, a super event. (W6HAL) . . . It was a great chance to try out my "fist" after recent hand and wrist surgery--thanks to my programmable keyer I did OK but I apologize to all the guys I sent extra "dits" to. (KY6L) . . . It was good to hear 15 open a little. Things are looking up!! (W6TKF).....SK

Top Ten Band Breakdowns

Out-of-State		15S	15C	20S	20C	40S	40C	75S	80C	160S	160C
Call	Score										
N6TR/7	130,500	0	4	195	59	530	56	94	37	21	34
KM3T	60,541	66	33	233	99	77	41	27	28	0	0
N5JB	64,512	0	0	377	71	25	39	0	6	0	0
KS3F	63,774	36	2	332	82	43	0	0	0	0	0
WA5DTK	62,046	0	0	257	111	41	52	14	12	0	0
AA4NC	61,380	27	17	290	80	18	49	1	2	0	0
VE7SK	55,350	2	4	119	97	55	66	42	32	0	0
WC4E	54,594	77	26	189	95	13	30	0	0	0	0
K4LTA	53,909	28	22	176	101	71	52	22	3	0	0
N6CQ/3	53,536	19	22	143	82	23	52	5	29	0	0

California		160S	160C	75S	80C	40S	40C	20S	20C	15S	15C	10M	VHF
Call	Score												
W6AQ	266,452	0	0	91	58	276	156	1158	234	76	16	0	0
N6BV	262,972	0	0	57	51	379	111	1127	209	109	26	0	0
N6BT	258,738	9	23	100	74	284	117	1046	135	227	20	0	11
N16W	250,038	18	32	91	56	83	148	1038	262	117	38	3	1
W6UE	245,456	17	15	66	45	194	165	1051	207	116	16	0	0
AI6V	242,846	20	22	54	51	257	106	1119	175	102	7	0	0
W7CB/6	195,634	2	18	87	47	101	86	785	214	131	22	0	0
W6REC	191,864	8	22	82	32	188	135	763	203	7	12	0	0
N6QR	171,171	0	34	0	100	0	236	0	494	0	120	17	0
NV6Z	149,292	0	0	90	33	137	13	796	128	3	0	0	0

Special Awards

The Top Twenty--
 Winners of a personalized bottle of California wine direct from the cellars of the Northern California Contest Club
 California: WA6OTU, N6BV, WA6VEF, N16W, AA6RX, AI6V, W7CB/6, W6REC, N6QR, NV6Z, N6ADI, NE6I, N6HC, K6RK, N6NF, K6AAW, W6UQF, W6HAL, VE2AQ/W6, and W6JTI.
 Outside California: N6TR/7, KM3T, N5JB, KS3F, WA5DTK, AA4NC, VE7SK, WC4E, K4LTA, N6CQ/3, W3YY, K9ZO, K7NW, N8ET, WX4G, WA3PWL, W3HDH, WB9JKI, KA1GQW, and WA1FCN.
 * * * * *
 Chairman's Award: CA single-op with the most CW QSOs--Adam Mentis, N6QR.
 Secretary's Award: CA mobile single-op or team with the most QSOs--Charles "Mac" McHenry, W6BSY/M.

Final Scores

Call, score, total QSOs, total CW QSOs (in parentheses), multiplier. An * = new single-op contest record; (M/S) = multi-singular; (CE) = single-op CA county expedition; (MCE) = multi-op CA county expedition; /M = mobile.

California

Alameda				
W6RGG	51,192	316	(316)	54
W6MFZ	50,880	320	(320)	53
N6EK	38,112	278	(238)	48
K6CSL	13,068	155	(86)	33
K6SIK	10,240	128	(0)	40
WE6G	6,562	79	(35)	34
K6ARE	2,484	36	(36)	23
K6XO/M	8	2	(0)	2
WR6R (+WE6G, K4UVT) (M/S)	72,094	556	(131)	58

Alpine				
W6BSY/M	33,934	327	(68)	47
W6TVP/6(CE)	1,980	30	(30)	22

Amador				
*N6QR	171,171	1001	(1001)	57
N6GG	43,608	316	(316)	46
K6BPB	19,926	162	(162)	41

Butte				
K6HTM	38,112	397	(0)	48

Calaveras				
K6RK	138,156	1007	(368)	58

Colusa				
KF6A (+K6SG, KV6H, N6IG, N6GJC, NB6G) (MCE)	163,792	1172	(480)	58

Contra Costa				
*N6BV	262,972	2069	(396)	58
VE2AQS/W6	119,643	1000	(99)	57
K6ZM	29,925	234	(197)	45
NB6L	18,020	170	(0)	53

Del Norte				
W6NAT	23,562	231	(0)	51

Fresno				
*W6DPD	11,016	153	(0)	36
K6XO/M	32	4	(0)	4

Glenn				
N6ESV(CE)	8,510	96	(38)	37

Humboldt				
W6JTI	103,950	711	(468)	55

Kern				
KA6CZS	6,240	80	(0)	39
N6LL(CE)	4,992	96	(0)	26

Kings				
*N6BT (WA6VEP op) (CE)	258,738	2046	(369)	58

Lake				
KR6G	19,104	199	(0)	48

Lassen				
*K6AAW(CE)	131,254	1017	(235)	58

Los Angeles				
*W6AQ (WA6OTU op)	266,452	2065	(464)	58
W6UE (AA6RX op)	245,456	1892	(448)	58
NE6I	145,232	1054	(396)	58
N6HC	140,244	1086	(246)	58
N6IBP	23,920	202	(116)	46
N6IC	18,306	113	(113)	54
KG6AR	6,232	101	(0)	31
WB6VVS	3,420	57	(57)	20
N6LL	2	1	(0)	1

Madera				
KD6FW	61,264	547	(0)	56
N6BIS(CE)	5,550	75	(0)	37
K6XO/M	2	1	(0)	1

Marin				
*K6LRN	73,590	503	(332)	55
K6YA (N6IIU, K6MA, WA6LIJ, WA6EAA, WA6ROM, KB6BA, WB6W, N6MLW, N6BC) (MCE)	34,700	298	(98)	50

Mariposa				
K6XO/M	868	23	(16)	14

Merced				
WU6I	46,255	350	(141)	55
K6XO/M	18	3	(0)	3
N6ZB (+KS6H) (MCE)	136,416	1000	(352)	58

Modoc				
*W6REC	191,864	1452	(404)	58

Mono				
WA6ZBX(CE)	35,048	337	(0)	52

Napa				
W6FSJ	89,958	627	(297)	58

Nevada				
*A16V	242,846	1913	(361)	58

Orange				
N4ARO/6	27,265	262	(141)	41
NG7D/6	10,438	117	(73)	34
KB6NFQ	2,000	40	(0)	25
WB6YPX (KI6X, WM6H) (M/S)	35,722	337	(0)	53

Placer				
K6TMB(CE)	66,700	575	(0)	58
N6ESV(CE)	390	15	(0)	13

Plumas				
KB6LSP	3,843	77	(29)	21
K6KWN	1,518	23	(23)	22

Riverside				
N6GDS	11,240	140	(1)	40

Sacramento				
KI6O	89,148	664	(236)	57
K6DR	62,593	508	(165)	53
W6NKR	61,380	372	(372)	55
KI6EZ(CE)	58,368	512	(0)	57
N6JV	57,942	358	(1)	54
KX6Z	14,432	111	(106)	44
N6JM	1,729	42	(7)	19
K8TPR	988	26	(0)	19

San Benito				
*NV6Z(CE)	149,292	1200	(174)	58
K6XO/M	408	17	(0)	12

San Bernardino				
*W6HAL	107,502	788	(310)	57
K6EID/6	80,248	626	(181)	56
W8AKS/M	9,272	122	(0)	38

San Diego				
*NI6W	250,038	1887	(537)	58
W6UQP	124,602	849	(488)	57
WA6UFY	40,404	360	(57)	52
AA6EE	11,880	90	(90)	44
K6NA	9,120	95	(95)	32

San Francisco				
K6ILM	23,424	191	(106)	48
KK1A/6	9,424	146	(12)	31
WA6AUE	9,036	91	(69)	36

San Joaquin				
KA6BIM	17,672	188	(0)	47
WB6YIY	6,600	75	(0)	44
K6XO/M	2	1	(0)	1
WC6H (+W7MAP, WC6I) (M/S)	209,902	1568	(483)	58

San Luis Obispo				
W7CB/6	195,634	1493	(387)	58
W6UA	49,134	350	(156)	57

San Mateo				
N6NF	136,938	988	(385)	58
W6SZN	25,474	213	(116)	47
W6OAT/6	23,908	223	(110)	43
W6KZJ	19,680	160	(160)	41
K6KLY	18,180	202	(0)	45
W6SYL	15,840	160	(160)	33
KD6XY (KA6ING op)	1,408	32	(0)	22
W6ISO	1,296	27	(27)	16
K6MO	972	27	(27)	12

Santa Barbara				
N6MB	100,340	865	(0)	58
WA6FGV	97,034	769	(135)	58
AC6T	20,460	155	(155)	44
KY6L	15,498	132	(105)	42

Santa Clara				
W6XB	55,825	454	(107)	55
AD6E	18,981	171	(171)	37
AJ6V	15,873	190	(49)	37
WD6EPV	15,078	121	(117)	42
K6XO	7,944	136	(59)	24
W6PRI	6,624	62	(60)	36
K6KM	330	11	(11)	10

Santa Cruz				
NS6V	39,474	293	(188)	51
KG6AO	11,795	154	(29)	35

Shasta				
WJ6Q	21,336	199	(110)	42

Sierra				
*N1EE/6(CE)	49,539	418	(175)	49
W6TVP/6(CE)	3,900	50	(50)	26

Solano				
WX6M	71,338	669	(8)	53

Sonoma				
W6D	45,504	316	(316)	48
K6BW	43,365	295	(295)	49
WB2CHO	156	13	(0)	6
WB6EGE (KA6AHK, N6MQ, N6QC, KA6OPN, WB6WPO) (M/S)	4,860	104	(62)	18

Stanislaus				
K6XO/M	40	4	(2)	4

Sutter				
N6ESV(CE)	390	15	(0)	13

Tehama				
WB6KOE	752	20	(7)	16

Tulare				
W6IFC	4,293	53	(53)	27
K6XO/M	2,626	40	(21)	26

Tuolumne				
K6XO/M	700	17	(16)	14

Ventura				
N6ADI	146,044	1099	(320)	58
W6TKF	63,965	491	(181)	55
WASVGI/6	34,545	245	(245)	47
N6MA	11,970	114	(114)	35
N6VR	7,488	83	(42)	36
NS6X	1,937	68	(13)	13

Yolo				
K3EST/6	7,874	99	(56)	31

Yuba				
N6ESV(CE)	416	16	(0)	13
WW6F (+K6ANP) (MCE)	75,362	606	(326)	49

Out-of State

Alabama			
N4JF	8,930	100	(35) 38
WA4VEK	4,290	65	(0) 33
Alaska			
*WL7K	16,400	164	(0) 50
NL7D	3,840	60	(0) 32
WL7E	2,320	40	(0) 29
Arizona			
W7YS	13,528	124	(108) 38
NN7A	11,556	107	(107) 36
AK7J	48	4	(4) 4
Colorado			
*ACOS	23,650	207	(136) 43
KJOG	17,372	150	(104) 43
NOFFZ	17,020	155	(150) 37
W2FV	14,937	152	(79) 39
KROU	14,319	151	(85) 37
W0LZV	8,931	93	(43) 39
KOGAS	6,188	91	(0) 34
Connecticut			
W1LFCN	27,090	225	(152) 45
K8HVT	20,286	193	(97) 42
K1BV	9,720	103	(64) 36
W1BEM	7,968	83	(83) 32
KFLB	476	17	(0) 14
K1KI	363	11	(11) 11
Florida			
WC4E	54,594	430	(151) 54
KF4BU	11,234	137	(0) 41
WK4F	6,734	91	(0) 37
KO4J	3,808	56	(0) 34
N4OKD	2,236	43	(0) 26
Georgia			
*WX4G	38,220	309	(117) 52
W8CNL	5,760	66	(28) 36
Hawaii			
*K6GSS/KH6	20,800	200	(0) 52
Idaho			
W7RH	21,844	200	(108) 43
Illinois			
K9ZO	51,728	412	(152) 53
WB9JKI	30,480	247	(141) 48
K9BG	6,848	77	(60) 32
WA9MRU	3,726	54	(30) 27
KA9FUG	2,418	39	(0) 31
KA9IMX	1,188	27	(0) 22
K9HRC	1,377	27	(27) 17
Indiana			
*NI6L	26,979	224	(81) 51
KD9BG	2,408	43	(0) 28
Iowa			
KC0CP	21,744	189	(75) 48
W0JTC	1,860	31	(31) 20
Kansas			
NOFMR	18,662	160	(114) 43
NOCLV	17,100	143	(94) 45
KDOYP	3,776	59	(0) 32
WA0TKJ	2,268	42	(0) 27
Kentucky			
WA4EBN	17,544	149	(110) 43
K2UPD	17,238	153	(136) 39
Maine			
K1HBB	8,568	84	(84) 34
K1CVM	2,080	40	(0) 26
W1APU	1,890	35	(35) 18
Maryland/DC			
*KM3T	80,541	606	(201) 57
W4KM	2,415	35	(35) 23
NN3SI (W4KM op)	1,020	23	(14) 17
Massachusetts			
*NB1B	21,798	203	(113) 42
KB1VL	10,619	102	(83) 37
K1CLN	4,031	61	(17) 29
W1FJ	2,675	39	(39) 25
W1OPJ	1,056	22	(22) 16

Michigan			
KN8P	25,488	223	(85) 48
W8SH (WA6DGX op)	9,828	100	(34) 42
K8CV	4,914	63	(63) 26
WA8OJR	3,432	52	(0) 33
K8KIR	2,925	39	(39) 25
W8WVU	1,638	26	(26) 21
W8JRK	1,472	32	(0) 23
Minnesota			
KGOB	11,742	103	(103) 38
KA7KDJ/0 (M/S)	6,786	87	(0) 39
Mississippi			
WB5ROI	5,920	80	(0) 37
Missouri			
WB0ZSS	9,288	86	(83) 36
Montana			
N7HFU	6,480	90	(0) 36
N71BG	5,425	60	(55) 31
Nebraska			
AKOG	4,640	63	(19) 32
NOGMR	3,162	51	(0) 31
WA0BOK	672	21	(0) 16
New Hampshire			
KAILBW	4,000	50	(25) 32
New Jersey			
NJ2D	13,720	142	(59) 40
WA2LBT	7,378	82	(53) 34
K2PF	1,200	25	(25) 16
K2EWA	680	20	(0) 17
New Mexico			
KB5DQ	5,882	78	(17) 34
W5FS	825	24	(7) 15
New York			
W1KKM	13,817	133	(71) 41
W2DUN	8,019	81	(81) 33
KZ2W	5,390	77	(0) 35
W2HG	3,328	46	(36) 26
N8BJQ/M	1,440	30	(0) 24
N2FZJ	1,080	20	(20) 18
North Carolina			
*AA4NC	61,380	484	(148) 55
KJ4TI	4,292	74	(0) 29
KS4S	4,234	60	(26) 29
North Dakota			
*WA3PWL	37,908	315	(99) 52
Ohio			
*N8ET	40,333	318	(125) 53
KU8E	16,492	173	(88) 38
K8MR	11,410	120	(86) 35
W8LNO	1,848	28	(28) 22
N8BJQ/M	986	29	(0) 17
KV8Q	462	14	(14) 11
Oklahoma			
KB6LO/5	13,920	145	(0) 48
Oregon			
*N6TR/7	130,500	1030	(190) 58
Pennsylvania			
*KS3F	63,774	527	(127) 54
N6CQ/3	53,536	382	(192) 56
W3HDH	30,780	258	(168) 45
W3ARK	10,218	100	(62) 39
K3TX	9,174	106	(66) 33
N3RJ	4,770	53	(53) 30
N3CBZ	1,188	25	(16) 18
N8BJQ/M	690	23	(0) 15
Rhode Island			
*KA1GQW	28,764	245	(122) 47
South Carolina			
*W6OKX/4	15,540	138	(94) 42
South Dakota			
*KD0EE	12,546	137	(32) 41
Tennessee			
*K4LTA	53,909	475	(197) 47
N4TG	20,988	200	(77) 44
KB4FHE	8,151	102	(5) 39

Texas			
*N5JB	64,512	518	(116) 56
WASDTK	62,046	487	(175) 54
K5CFA	25,080	190	(190) 44
KN5H	24,596	210	(139) 44
AG5C	18,642	168	(142) 39
W5PWF	17,082	156	(126) 39
W5ASP	11,802	105	(71) 42
W5NR	11,672	118	(107) 34
N5GOF	9,916	102	(64) 37
WN4KKN	6,420	86	(42) 30
WAS1YX	5,106	69	(0) 37
Utah			
*WB7TJI	9,213	100	(49) 37
K6YT/7	5,460	67	(48) 30
Vermont			
W1JVV	6,244	80	(63) 28
N1EBT	2,580	43	(0) 30
Virginia			
*W3YY	52,528	400	(138) 56
W4XD	7,875	75	(75) 35
KB4RDH	1,564	34	(0) 23
W4YE	1,200	25	(25) 16
Washington			
K7NW	43,576	352	(134) 52
KC7YE	10,044	106	(67) 36
KM7E	9,216	128	(0) 36
K7WA	7,194	77	(64) 33
West Virginia			
NR8A	4,563	61	(47) 27
W8VEN	3,654	63	(0) 29
Wisconsin			
K9JIG	3,906	63	(0) 31
Wyoming			
*K7MM	12,012	124	(60) 39
Maritime			
VE1DH	20,586	172	(94) 47
Quebec			
*VE2EDK	11,484	119	(110) 33
Ontario			
VE3KK	13,357	124	(113) 37
Alberta			
*VE6BMX	9,672	104	(104) 31
British Columbia			
*VE7SK	55,350	414	(197) 54
VE7AHA	25,850	227	(96) 47
VE7IQ	13,880	133	(81) 40
VE7BLU	768	23	(2) 16
NWT-Yukon			
*VE8CM	6,162	79	(0) 39
Asia			
JH7WKQ	1,024	22	(20) 16
JH3DEJ	32	4	(0) 4
JA9YBA (JA9IIG, JA9VDA, JA9-10148 ops) (M/S)	972	25	(4) 18
Europe			
*LA8PF	5,518	63	(52) 31
EA2IA	3,240	45	(45) 24
F6BEE	1,326	26	(26) 17
EA4BVE	960	20	(20) 16
North America			
KBUNP/PJ7	80	6	(4) 5
South America			
*YV5BPG	3,762	57	(0) 33
PT2TF	936	26	(0) 18
YY1C	570	19	(0) 15

Check logs: Y35UG, N6NLP, and N6UW.